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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09/754,486      | 01/03/2001  | Stephen Temple       | 27754/X254A         | 4903             |

4743 7590 08/11/2006

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| ART UNIT | PAPER NUMBER |
|----------|--------------|

1732

DATE MAILED: 08/11/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/754,486

Applicant(s)

TEMPLE ET AL.

Examiner

Stefan Staicovici

Art Unit

1732

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on April 28, 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 9,23-25,31 and 34-37 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 36 and 37 is/are allowed.
- 6) ☒ Claim(s) 9,23-25, 31 and 35 is/are rejected.
- 7) ☒ Claim(s) 34 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

### DETAILED ACTION

1. In view of the Remand by the Board of Patent Appeals and Interferences mailed April 28, 2006, prosecution of the instant application is re-opened. As such, the finality of the rejection of the last Office action is withdrawn and a new non-final rejection is presented below.

#### *Claim Rejections - 35 USC § 112*

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 9 and 34-35 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter that was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

In claim 9, the limitation that the beam is “inverted” and directed “along an axis collinear with said first axis” by reflecting the beam off a “planar reflecting surface” and a “at least two additional beam reflecting surfaces” is not clear to one ordinarily skilled in the art. According to Figure 5a and the original specification at page 12, line 12 through page 13, line 25, it appears that inversion of the laser beam can occur only when reflecting the laser beam off three reflecting surfaces. Further, it should be noted that inversion of the beam could not occur when using *four*

(emphasis added) reflecting surfaces. Further clarification is required. Claims 34-35 are rejected as dependent claims.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 9, 23-24 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishiwaki *et al.* (US Patent No. 5,263,250) in view of Shei *et al.* (US Patent No. 5,569,238) and in further view of GB 2 262 253 A.

Nishiwaki *et al.* ('250) teach the basic claimed apparatus and process for forming nozzles in a nozzle plate for an inkjet print head including, splitting a laser beam (3) into a plurality of secondary beams using a system of prisms and a flyeye lens (4), hence introducing a divergence into the secondary beams, whereas the origin of divergence being apart from the point where beam splitting occurs (see Figure 2), followed by a process of recombining and directing the

secondary beams, using a convergent lens, toward a single aperture of a mask as defined by a light transmissible portion as shown in Figure 5, whereas the resulting light spot is made to coincide to with the light transmissible portion (aperture) of the mask (see col. 4, lines 54-56).

Regarding claims 9, 23-24 and 31, Nishiwaki *et al.* ('250) does not teach directing the laser beam to a first reflecting surface and then to at least two additional beam reflecting surfaces that are rotating as an assembly such as to invert the beam in a collinear direction. Shei *et al.* ('238) teach an optical homogenizer system including a first, second and third reflecting means (discrete members) that rotate (130) (see col.4, lines 53-57). It should be noted that because the optical homogenizer system reshapes and homogenizes the beam in a circular fashion that said homogenizer rotates. Further, it should be noted that because the optical homogenizer system of Shei *et al.* ('238) includes a similar structure as claimed, specifically three rotating reflecting surfaces placed at an angle to the incoming beam, then it is submitted that the outgoing laser beam of Shei *et al.* ('238) is inverted. Therefore, it would have been obvious for one of ordinary skill in the art to have provided an optical homogenizer system including a first, second and third reflecting means that rotate as taught by Shei *et al.* ('238) in the process of Nishiwaki *et al.* ('250) because, Shei *et al.* ('238) specifically teach that such a homogenizer reshapes and homogenizes the beam in a circular fashion, hence improving the quality of the resulting nozzles. It should be noted that the apparatus of Nishiwaki *et al.* ('250) in view of Shei *et al.* ('238) teach a nozzle plate substrate and a beam homogenizer.

Further regarding claims 9, 23-24 and 31, Nishiwaki *et al.* ('250) in view of Shei *et al.* ('238) do not teach forming a reverse tapered hole (directing said beam at said substrate such that

said beam first impinges upon the face of the nozzle plate in which said nozzle outlet is formed...nozzle inlet is larger in diameter than nozzle outlet). GB 2 262 253 A teaches a laser drilling process including rotating a laser beam about the polar axis of a fixed spherical lense by rotating an optical assembly that reflects the laser beam between an outer mirror (11) and an inner mirror (14) such that a reversed tapered hole is formed (see Abstract). Further, it is noted that the optical assembly in the process of Nishiwaki *et al.* ('250) in view of Shei *et al.* ('238), hence the laser beam, is also rotated. Therefore, it would have been obvious for one of ordinary skill in the art, in view of the teachings of GB 2 262 253 A, that upon rotation of the laser beam assembly as taught by GB 2 262 253 A in the process of Nishiwaki *et al.* ('250) in view of Shei *et al.* ('238) to have obtained a reverse tapered hole, because of known advantages that a reverse tapered hole provides such as, allowing the nozzle ink inlet to match the shape of an ink channel in the printhead and also because, forming both tapered and reverse tapered holes provides for a more versatile process. Further, it is noted that GB 2 262 253 A specifically teaches that rotation of the laser beam forms a reverse tapered hole, whereas Nishiwaki *et al.* ('250) in view of Shei *et al.* ('238) teach rotating of the optical assembly and hence, rotating the laser beam, thereby suggesting that the process and apparatus of Nishiwaki *et al.* ('250) in view of Shei *et al.* ('238) and in further view of GB 2 262 253 A teaches a reverse tapered hole.

7. Claims 9, 23-24 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishiwaki *et al.* (US Patent No. 5,263,250) in view GB 2 262 253 A.

Nishiwaki *et al.* ('250) teach the basic claimed apparatus and process for forming nozzles in a nozzle plate for an inkjet print head including, splitting a laser beam (3) into a plurality of

secondary beams using a system of prisms and a flyeye lens (4), hence introducing a divergence into the secondary beams, whereas the origin of divergence being apart from the point where beam splitting occurs (see Figure 2), followed by a process of recombining and directing the secondary beams, using a convergent lens, toward a single aperture of a mask as defined by a light transmissible portion as shown in Figure 5, whereas the resulting light spot is made to coincide to with the light transmissible portion (aperture) of the mask (see col. 4, lines 54-56).

Regarding claims 9, 23-24 and 31, Nishiwaki *et al.* ('250) does not teach directing the laser beam to a first reflecting surface and then to at least two additional beam reflecting surfaces that are rotating as an assembly such as to invert the beam in a collinear direction. GB 2 262 253 A teaches a laser drilling process including rotating a laser beam about the polar axis of a fixed spherical lense by rotating an optical assembly including, an inner mirror (14) having two reflecting surfaces and an outer mirror (11) having two reflecting surfaces (see Figure 4), that rotate and reflect the laser beam such that a reversed tapered hole is formed (see Abstract). Further, it should be noted that because the optical assembly of GB 2 262 253 A includes a similar structure as claimed, specifically a first reflecting surface and at least two additional reflecting surfaces placed at an angle to the incoming beam, then it is submitted that the outgoing laser beam of GB 2 262 253 A is also inverted. Therefore, it would have been obvious for one of ordinary skill in the art to have provided a rotating optical assembly having a first reflecting surface and at least two additional beam reflecting surfaces that are rotating as an assembly as taught by GB 2 262 253 A in the process of Nishiwaki *et al.* ('250) because, GB 2 262 253 A teaches that such an assembly provides for reverse tapered holes, hence improving process

versatility by allowing drilling of preformed surfaces in which the undersurface is not accessible and also because of known advantages that a reverse tapered hole provides such as, allowing the nozzle ink inlet to match the shape of an ink channel in the printhead.

8. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nishiwaki *et al.* (US Patent No. 5,263,250) in view of Shei *et al.* (US Patent No. 5,569,238) and in further view of GB 2 262 253 A and Daly (US Patent No. 4,316,074).

Nishiwaki *et al.* ('250) in view of Shei *et al.* ('238) and further view of GB 2 262 253 A teach the basic claimed process as described above.

Regarding claim 25, although Nishiwaki *et al.* ('250) in view of Shei *et al.* ('238) and further view of GB 2 262 253 A teach reflective means, Nishiwaki *et al.* ('250) in view of Shei *et al.* ('238) and further view of GB 2 262 253 A do not specifically teach dielectric mirrors. Daly ('074) teaches the use of high reflectance dielectric mirrors (see col. 6, lines 30-35). Therefore, it would have been obvious for one of ordinary skill in the art to have used the high reflectance dielectric mirrors of Daly ('074) in the process of Nishiwaki *et al.* ('250) in view of Shei *et al.* ('238) and further view of GB 2 262 253 A because, Daly ('074) teaches that such mirrors have a 99% reflectance rate, whereas the process of Nishiwaki *et al.* ('250) in view of Shei *et al.* ('238) and further view of GB 2 262 253 A requires reflective means for homogenizing the beam, hence improving process quality.

9. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nishiwaki *et al.* (US Patent No. 5,263,250) in view of GB 2 262 253 A and in further view of Daly (US Patent No. 4,316,074).



Nishiwaki *et al.* ('250) in view of GB 2 262 253 A teach the basic claimed process as described above.

Regarding claim 25, although Nishiwaki *et al.* ('250) in view of GB 2 262 253 A teach reflective surfaces, Shei *et al.* ('238) do not specifically teach dielectric mirrors. Daly ('074) teaches the use of high reflectance dielectric mirrors (see col. 6, lines 30-35). Therefore, it would have been obvious for one of ordinary skill in the art to have used the high reflectance dielectric mirrors of Daly ('074) in the process of Nishiwaki *et al.* ('250) in view of GB 2 262 253 A because, Daly ('074) teaches that such mirrors have a 99% reflectance rate, whereas the process of Nishiwaki *et al.* ('250) in view of GB 2 262 253 A requires reflective means for reflecting and inverting the beam, hence improving process quality.

10. Claim 35 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nishiwaki *et al.* (US Patent No. 5,263,250) in view of Shei *et al.* (US Patent No. 5,569,238) and in further view of GB 2 262 253 A and Hizny (US Patent No. 5,048,938).

Nishiwaki *et al.* ('250) in view of Shei *et al.* ('238) and further view of GB 2 262 253 A teach the basic claimed process as described above.

Regarding claim 35, although Nishiwaki *et al.* ('250) in view of Shei *et al.* ('238) and further view of GB 2 262 253 A does not teach the use of a second mask interposed between the first mask (8) and the beam converging lens (10), the use of multiple masks to process a laser beam is well known in the art as evidenced by Hizny ('938) which teaches that "cleaning" of the beam occurs by using a spatial filter (mask) (see col. 1, lines 10-15). Therefore, it would have been obvious for one of ordinary skill in the art to have interposed a second mask (spatial filter)

as taught by Hizny ('938) in the process of Nishiwaki *et al.* ('250) in view of Shei *et al.* ('238) and further view of GB 2 262 253 A because, Hizny ('938) specifically teaches that using a spatial filter (mask) allows "cleaning" of the laser beam prior to its impingement on the target, hence improving product quality and also because Hizny ('938) specifically teaches that the use of spatial filters is well known.

11. Claim 35 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nishiwaki *et al.* (US Patent No. 5,263,250) in view of GB 2 262 253 A and in further view of Hizny (US Patent No. 5,048,938).

Nishiwaki *et al.* ('250) in view of GB 2 262 253 A teach the basic claimed process as described above.

Regarding claim 35, although Nishiwaki *et al.* ('250) in view of GB 2 262 253 A does not teach the use of a second mask interposed between the first mask (8) and the beam converging lens (10), the use of multiple masks to process a laser beam is well known in the art as evidenced by Hizny ('938) which teaches that "cleaning" of the beam occurs by using a spatial filter (mask) (see col. 1, lines 10-15). Therefore, it would have been obvious for one of ordinary skill in the art to have interposed a second mask (spatial filter) as taught by Hizny ('938) in the process of Nishiwaki *et al.* ('250) in view of GB 2 262 253 A because, Hizny ('938) specifically teaches that using a spatial filter (mask) allows "cleaning" of the laser beam prior to its impingement on the target, hence improving product quality and also because Hizny ('938) specifically teaches that the use of spatial filters is well known.

12. Claims 9, 23-24 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishiwaki *et al.* (US Patent No. 5,263,250) in view of Shei *et al.* (US Patent No. 5,569,238) and in further view of Applicants' Admitted prior Art (APA).

Nishiwaki *et al.* ('250) teach the basic claimed apparatus and process for forming nozzles in a nozzle plate for an inkjet print head including, splitting a laser beam (3) into a plurality of secondary beams using a system of prisms and a flyeye lens (4), hence introducing a divergence into the secondary beams, whereas the origin of divergence being apart from the point where beam splitting occurs (see Figure 2), followed by a process of recombining and directing the secondary beams, using a convergent lens, toward a single aperture of a mask as defined by a light transmissible portion as shown in Figure 5, whereas the resulting light spot is made to coincide to with the light transmissible portion (aperture) of the mask (see col. 4, lines 54-56).

Regarding claims 9, 23-24 and 31, Nishiwaki *et al.* ('250) does not teach directing the laser beam to a first reflecting surface and then to at least two additional beam reflecting surfaces that are rotating as an assembly such as to invert the beam in a collinear direction. Shei *et al.* ('238) teach an optical homogenizer system including a first, second and third reflecting means (discrete members) that rotate (130) (see col.4, lines 53-57). It should be noted that because the optical homogenizer system reshapes and homogenizes the beam in a circular fashion that said homogenizer rotates. Further, it should be noted that because the optical homogenizer system of Shei *et al.* ('238) includes a similar structure as claimed, specifically three rotating reflecting surfaces placed at an angle to the incoming beam, then it is submitted that the outgoing laser beam of Shei *et al.* ('238) is inverted. Therefore, it would have been obvious for one of ordinary

skill in the art to have provided an optical homogenizer system including a first, second and third reflecting means that rotate as taught by Shei *et al.* ('238) in the process of Nishiwaki *et al.* ('250) because, Shei *et al.* ('238) specifically teach that such a homogenizer reshapes and homogenizes the beam in a circular fashion, hence improving the quality of the resulting nozzles. It should be noted that the apparatus of Nishiwaki *et al.* ('250) in view of Shei *et al.* ('238) teach a nozzle plate substrate and a beam homogenizer.

Further regarding claims 9, 23-24 and 31, Nishiwaki *et al.* ('250) in view of Shei *et al.* ('238) do not teach forming a reverse tapered hole (directing said beam at said substrate such that said beam first impinges upon the face of the nozzle plate in which said nozzle outlet is formed...nozzle inlet is larger in diameter than nozzle outlet). However, Applicants' Admitted Prior Art (APA) teaches that it is well known to form a reverse tapered hole by controlling the divergence of the beam, which in turn determines the angle of taper of the nozzle: (see specification, page 1, lines 18-19). Further, APA teaches that it is well known to use a second mask to reduce the angle of divergence in one plane of the beam relative to another, and thereby obtain a reverse tapered hole (nozzle). Therefore, it would have been obvious for one of ordinary skill in the art to control the divergence of the beam as taught by APA in the process and apparatus of Nishiwaki *et al.* ('250) in view of Shei *et al.* ('238) because APA specifically teaches that it is well known to form a reverse tapered hole, hence providing for an improved product by allowing the nozzle ink inlet to match the shape of an ink channel in the printhead and also because, forming both tapered and reverse tapered holes provides for a more versatile process.

13. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nishiwaki *et al.* (US Patent No. 5,263,250) in view of Shei *et al.* (US Patent No. 5,569,238) and in further view of Applicants' Admitted prior Art (APA) and Daly (US Patent No. 4,316,074).

Nishiwaki *et al.* ('250) in view of Shei *et al.* ('238) and further view of APA teach the basic claimed process as described above.

Regarding claim 25, although Nishiwaki *et al.* ('250) in view of Shei *et al.* ('238) and further view of APA teach reflective means, Nishiwaki *et al.* ('250) in view of Shei *et al.* ('238) and further view of APA do not specifically teach dielectric mirrors. Daly ('074) teaches the use of high reflectance dielectric mirrors (see col. 6, lines 30-35). Therefore, it would have been obvious for one of ordinary skill in the art to have used the high reflectance dielectric mirrors of Daly ('074) in the process of Nishiwaki *et al.* ('250) in view of Shei *et al.* ('238) and further view of APA because, Daly ('074) teaches that such mirrors have a 99% reflectance rate, whereas the process of Nishiwaki *et al.* ('250) in view of Shei *et al.* ('238) and further view of GB 2 262 253 A requires reflective means for homogenizing the beam, hence improving process quality.

14. Claim 35 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nishiwaki *et al.* (US Patent No. 5,263,250) in view of Shei *et al.* (US Patent No. 5,569,238) and in further view of Applicants' Admitted prior Art (APA) and Hizny (US Patent No. 5,048,938).

Nishiwaki *et al.* ('250) in view of Shei *et al.* ('238) and further view of APA teach the basic claimed process as described above.

Regarding claim 35, although APA teach the concept of using multiple masks (see specification, page 1, lines 18-20), Nishiwaki *et al.* ('250) in view of Shei *et al.* ('238) and further view of APA do not specifically teach the use of a second mask interposed between the first mask (8) and the beam converging lens (10). However, the use of multiple masks to process a laser beam is well known in the art as evidenced by Hizny ('938) which teaches that "cleaning" of the beam occurs by using a spatial filter (mask) (see col. 1, lines 10-15). Therefore, it would have been obvious for one of ordinary skill in the art to have interposed a second mask (spatial filter) as taught by Hizny ('938) in the process of Nishiwaki *et al.* ('250) in view of Shei *et al.* ('238) and further view of APA because, Hizny ('938) specifically teaches that using a spatial filter (mask) allows "cleaning" of the laser beam prior to its impingement on the target, hence improving product quality and also because, Hizny ('938) specifically teaches that the use of spatial filters is well known.

***Allowable Subject Matter***

15. Claims 36-37 are allowed.
16. Claim 34 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Response to Declaration of Stephen Temple filed October 22, 2004***

17. As stated in the Office Action mailed January 12, 2005, the declaration of Mr. Stephen Temple, filed October 22, 2004 under 37 CFR 1.132 (hereinafter the "Declaration"), is insufficient to overcome the rejections based upon the teachings of Nishiwaki *et al.* ('250), Shei *et al.* ('238), GB 2 262 253 A, Hizny ('938) and Daly ('074) (see ¶17 of the Office Action mailed January 12, 2005). In order to advance prosecution of the instant application, a review of the arguments and responses, regarding the Declaration, as presented in the Office Action mailed January 12, 2005 is shown below.

18. In response to applicant's argument that the teachings of Shei *et al.* ('238) and GB 2 262 253 A are nonanalogous art (see ¶¶ 5-7 and 17 of the Declaration filed 10/22/2004), it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, Shei *et al.* ('238) teach an optical homogenizer system including a first, second and third reflecting means (discrete members) that rotate (130) (see col.4, lines 53-57) and homogenizes the beam, thereby obtaining a uniform beam having a uniform energy distribution. GB 2 262 253 A teaches a laser drilling process including rotating a laser beam about the polar axis of a fixed spherical lens by rotating an optical assembly that reflects the laser beam between an outer mirror (11) and an inner mirror (14) such that a reversed tapered hole is formed (see Abstract). It is noted that Applicants state that the primary reference of Nishiwaki *et al.* ('250) teach forming an inkjet nozzle by achieving

“uniformity of illumination” (see ¶7 of the Declaration filed 10/22/2004). Hence, Shei *et al.* (‘238) teach a process and apparatus that results in a laser beam having a uniform energy distribution, whereas GB 2 262 253 A teaches improving the versatility of the process by allowing drilling of preformed surfaces in which the undersurface is not accessible. Therefore, the teachings of Shei *et al.* (‘238) and GB 2 262 253 A are deemed to be reasonably pertinent to the particular problem with which the applicant was concerned.

19. Applicants argue that, “any combination of Nishiwaki and Shei would destroy the specific and intended teachings of Nishiwaki to *quickly* (emphasis added) and accurately produce multiple nozzles in a nozzle plate at the same time” (see ¶¶ 8-10 and 16 of the Declaration filed 10/22/2004). In response, it is noted that under MPEP §2144.04(VI)(B), the “mere duplication of parts has not patentable significance unless a new and unexpected result is produced.” Hence, whether a single or multiple holes are produced has not patentable significance. Furthermore, it is noted that under MPEP §2144(VII), “[T]he fact that a combination would not be made by businessmen for economic reasons does not mean that a person of ordinary skill in the art would not make the combination because of some technological incompatibility.” In re Farrenkopf, 713 F.2d 714, 219 USPQ 1 (Fed. Cir. 1983). Hence, whether holes are being produced slowly or fast has not patentable significance.

20. Applicants argue that the “accurate nozzles achieved by the Nishiwaki method are in fact of lesser quality than those obtained by my invention” (see ¶11 of the Declaration filed 10/22/2004). “A reference may be relied upon for all that it would have reasonably suggested to one having ordinary skill the art, including nonpreferred embodiments.” Merck & Co. v.



Biocraft Laboratories, 874 F.2d 804, 10 USPQ2d 1843 (Fed. Cir.). *See also*, Celeritas Technologies Ltd. v. Rockwell International Corp., 150 F.3d 1354, 1361, 47 USPQ2d 1516, 1522-23 (Fed. Cir. 1998) (“The fact that a modem with a single carrier data signal is shown to be less than optimal does not vitiate the fact that it is disclosed.”).

21. Applicants argue that contrary to Nishiwaki, the nozzles of the claimed invention have a reverse taper (see ¶ 12 of the Declaration filed 10/22/2004). However, where the rejections are based on combinations of references, one cannot show nonobviousness by attacking references individually. *See In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). In this case, both GB 2262253A and Applicant’s Admitted prior Art teach laser processing of reverse tapered holes.

22. Applicants argue that contrary to the claimed invention where the outlet beam is not rotating, the beam in GB 2262253A is “moving about the axis 17” (see ¶¶ 13-15 of the Declaration filed 10/22/2004). In response, it is noted that in Figure 4 of GB 2262253A it is shown a laser beam (18) traveling co-linear with the axis of rotation 17. Further, it is noted that GB 2262253A teaches that assembly 11 is rotated about axis 17 (see Figure 4).


### ***Conclusion***

23. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stefan Staicovici, Ph.D. whose telephone number is (571) 272-1208. The examiner can normally be reached on Monday-Friday 9:30 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christina Johnson, can be reached on (571) 272-1176. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Stefan Staicovici, PhD

  
Primary Examiner 8/10/06

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August 10, 2006